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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/037,845	01/07/2002	Norman A. Shoenfeld	522.009PA	8190

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EXAMINER
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REKSTAD, ERICK J

ART UNIT	PAPER NUMBER
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2613

DATE MAILED: 03/09/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

<b>Office Action Summary</b>	Application No. 10/037,845	Applicant(s) SHOENFELD, NORMAN A.	
	Examiner Erick Rekstad	Art Unit 2613	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

**Period for Reply**

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

**Status**

- 1) ☒ Responsive to communication(s) filed on 07 January 2002.
- 2a) ☐ This action is **FINAL**.                      2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

**Disposition of Claims**

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1-12, 14 and 15 is/are rejected.
- 7) ☒ Claim(s) 13 and 14 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

**Application Papers**

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

**Priority under 35 U.S.C. § 119**

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \* c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
  2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

**Attachment(s)**

- |   |   |
|---|---|
| 1) <input type="checkbox"/> Notice of References Cited (PTO-892)                        | 4) <input type="checkbox"/> Interview Summary (PTO-413)                     |
| 2) <input type="checkbox"/> Notice of Draftsperson's Patent Drawing Review (PTO-948)    | Paper No(s)/Mail Date. _____  |
| 3) <input type="checkbox"/> Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08) | 5) <input type="checkbox"/> Notice of Informal Patent Application (PTO-152) |
| Paper No(s)/Mail Date _____   | 6) <input type="checkbox"/> Other: _____                                    |

### **DETAILED ACTION**

This is a **SUPPLEMENTAL** action for application no. 10/037,845 filed on January 7, 2002 in which claims 1-15 are presented for examination.

#### ***Claim Objections***

Claim 14 is objected to because of the following informalities: The claim states "carrier" on line 1 of page 11. The claim should state "carriage". Appropriate correction is required.

#### ***Specification***

The disclosure is objected to because of the following informalities: Lines 1-2 on page 1 states a continuation of application no. 09/692,239 containing a blank for US Patent number. Application no. 09/692,239 has been abandoned do to untimely response to an office action.

Appropriate correction is required.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 1 and 4 rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

[claim 1]

The claim states "generally linear" on line 11 of page 9. The use of "generally" is indefinite.

[claim 4]

The claim states "about one inch" on line 2 of page 10. The use of "about" is indefinite.

***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

Claims 1-4, 7-9, 14 and 15 are rejected under 35 U.S.C. 103(a) as being unpatentable over US Patent 5,184,217 to Doering in view of US Patent 5,132,791 to Wertz et al. and further in view of US Patent 4,212,049 to Maskens.

[claim 1]

In Figure 1, Doering teaches a sheet metal scanner using machine vision for checking the accuracy of openings drilled or punched into a mechanical part (Col 2 Lines 12-20, Fig. 1). The scanner contains a lower assembly, which includes a housing (12). Doering teaches the use of a carriage assembly (22) and can perform movement in two orthogonal directions in a horizontal plane (Col 4 Lines 24-45, Fig. 1). The scanner further includes a flat transparent support plate (Col 3 Lines 57-65, Fig. 1). A camera assembly (30) is mounted on said carriage (22). A linear illuminator mounted above said lower assembly and providing a substantially uniform light along a line in one of said orthogonal directions and being linearly movable in the other of said orthogonal directions across said support plate (26) (Col 4 Lines 1-3, Fig. 1). The

scanner also includes a control means coupled with said carriage assembly and with said camera assembly for guiding said camera assembly in a controlled scanning pattern within said lower assembly housing and processing image data of said part based on pixels produced by said camera assembly imager (150) (Col 6 Lines 54-67, Fig. 1). The illuminator control means for linearly moving said illuminator in the other of said orthogonal directions to track motion of said camera carriage member (Col 6 Line 54-Col 7 Line 32). Doering does not teach enclosing the housing to prevent dust and other contaminants. Doering does not specifically teach the camera housing (30) as a carriage assembly.

Wertz teaches the use of enclosing the housing in order to prevent dust from the rather dirty environment of a production line from interfering with the sensitive camera optics (Col 9 Lines 1-7). Wertz does not teach the camera housing as a carriage assembly. It would have been obvious to one skilled in the art at the time of the invention to combine the housing of Doering with the enclosing method of Wertz in order to protect the sensitive camera optics.

Masken teaches a guided carriage assembly as shown in Figure 1. Masken further teaches the assembly comprises a carriage (15) which is linearly movable along guide means in the Y-direction and a second carriage (19) linearly movable along the guide means in the X-direction (Col 1 Line 63-Col 2 Line 5). It would have been obvious to one of ordinary skill in the art at the time of the invention that the carriage (22) of Doering is equivalent to carriage (15) of Masken and the camera unit (30) of Doering is equivalent to the carriage (19) of Masken as both assemblies provide the movement of

the inner carriage (19 of Masken, 30 of Doering) along one axis while moving the outer carriage (15 of Masken, 22 of Doering) along the perpendicular axis.

[claim 2]

Doering does not teach the use of a polarizing filter. Wertz teaches the use of an Infrared filter between the light and the camera in order to selectively enhance defects (Col 8 Lines 67-68 and Col 9 Line 1, Fig. 3). It would have been obvious to one skilled in the art at the time of the invention to combine the housing of Doering with the filter of Wertz in order to filter the light going to the camera.

[claim 3]

Doering teaches the use of a tube fluorescent lamp (54, Fig. 2) in a system for detecting holes in sheet metal (Col 4 Lines 46-54, Fig. 2). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the lighting system of Doering in order to provide a provided a constant level of high intensity illumination as taught by Doering.

[claim 4]

Doering teaches the use of a tube fluorescent lamp. Doering does not specifically teach the desired height of the lamp above the table. It would have been obvious to one of ordinary skill in the art at the time of the invention to place the lamp at a height that would clear the width of the sheet metal to be inspected (Official Notice).

[claim 7]

Doering teaches the use of a linear imager producing one line of pixels at a time (Col 5 Lines 16-55). As cited, Doering uses a CCD image sensor to transfer a row of

2048 elements in parallel to a video sensor board. It would have been obvious to one of ordinary skill in the art at the time of the invention to produce one line of pixels at a time as taught by Doering.

[claim 8]

Doering does not teach a method of adjusting the height of the support plate. Wertz teaches the use of adjustable feet to provide for height adjustment in the production line (Col 6 Lines 38-42). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the system of Doering with the adjustable feet of Wertz in order to adjust the height of the system to work in a production line.

[claim 9]

Doering teaches the scanning of only the workpiece in order to reduce scanning time (Col 4 Lines 20-23). It would have been obvious to one skilled in the art at the time to use the method of Doering to reduce the scanning time.

[claim 14]

Doering teaches the calibrating for compensating for defects in the linear rails and in the support plate (Col 5 Line 56-Col 6 Lines 8). Maskens teaches the adjustment of screws in order to perform fine adjustment of the angle between the direction of movement of the carriage (19) relative to the chassis of carriage (15) and movement of carriage (15) relative to the frame (Col 3 Lines 43-65, Fig. 1). It would have been obvious to one of ordinary skill in the art at the time of the invention to combine the compensation method of Doering with the compensation method of Maskens in order to

compensate for camera vignetting, illumination response, and misalignment of the straight edges as taught by Doering and Maskens.

[claim 15]

Doering teaches the use of a ccd camera. Doering further teaches the focusing of the camera to provide a depth of focus greater than 0.5 inch (Col 4 Lines 59-63, Col 5 Lines 5-15). It would have been obvious to one of ordinary skill in the art at the time of the invention to use the focusing system of Doering in order to provide a depth of focus greater than 0.5 inch.

Claims 5, 6 and 10 are rejected under 35 U.S.C. 103(a) as being unpatentable over Doering, Wertz, and Maskens as applied to claim 1 above, and further in view of US Patent 4,711,579 to Wilkinson.

[claim 5]

Doering teaches the use of a carriage assembly containing a screw type method of moving the camera left to right (Col 4 Lines 5-8, Fig. 1). Doering teaches the use of a rack and pinion gear interface to move the camera back and forward (Col 3 Lines 66-68, Fig. 1). Doering does not teach using a screw type method to move the camera back and forward. Wilkinson teaches the method of using a screw type method to move the camera back and forward in a continuous linear movement (Col 3 Lines 32-42, Fig. 1). It would have been obvious to one skilled in the art at the time of the invention to replace the rack and pinion gear interface of Doering, Wertz and Maskens with the screw type method of Wilkinson in order to provide a continuous linear movement.

[claim 6]



Doering teaches the use of an optical sensor to control the position of the carriage but does not explain how the sensor determines location (Col 4 Lines 24-45). Doering does not teach the use of tape encoders for determining X and Y location of the carriage. Wilkinson teaches the use of a calibration strip (tape) to provide position information to which the optical sensor assemblies are responsive (Col 3 Lines 22-25). It would have been obvious to one skilled in the art at the time of the invention to combine the optical sensor of Doering, Wertz and Maskens with the calibration strip of Wilkinson in order to provide position information to which the optical sensor assemblies are responsive.

[claim 10]

Doering teaches the use of screw type movement. Doering does not teach the use of dampers. Wilkinson teaches the use of twin ball bushing pillow blocks (dampers) as part of the construction of the carriage for use with screw type movement (Col 3 Lines 26-42, Fig. 1). It would have been obvious to one skilled in the art at the time of the invention to combine the carriage of Doering, Wertz and Maskens with the pillow blocks of Wilkinson in order to construct a carriage for use with screw type movement.

Claim 11 is rejected under 35 U.S.C. 103(a) as being unpatentable over Doering, Wertz, Maskens and Wilkinson as applied to claim 10 above, and further in view of US Patent 4,417,260 to Kawai et al.

[claim 11]

Doering, Wertz, Maskens, and Wilkinson do not teach the motion damping means including means for tuning to damp out specific frequencies. Kawai teaches the

use of insulating the vibration of a feeding/discharging mechanism from the recoding process in order to prevent distortion, cyclic unevenness of the density, and displacement of a recorded image (Col 2 Lines 5-12). Kawai further teaches that springs are used as a vibration insulator (Col 1 Lines 55-68, Fig. 1). Kawai teaches that when a spring is used as a vibration insulator, the spring constant is selected with respect to the mass of said frame structure so that the frequency of the vibration of the frame is sufficiently lower than the natural frequency of the frame structure itself (Col 1 Lines 67-68 and Col 2 Lines 1-4). It would have been obvious to one skilled in the art at the time of the invention to combine the system of Doering, Wertz, Maskens and Wilkinson with the vibration insulator of Kawai in order to adjust the vibration insulator (spring) so the frequency of the vibration of the frame is sufficiently lower than the natural frequency of the frame structure.

Claim 12 is rejected under 35 U.S.C. 103(a) as being unpatentable over Doering, Wertz, and Maskens as applied to claim 1 above, and further in view of US Patent 6,236,734 to Barry.

[claim 12]

Doering, Wertz and Maskens do not teach the camera has a body portion with its center of gravity disposed beneath the plane of said scanning camera carriage assembly. As shown in Figure 2, Barry teaches the camera with a body portion (12) with its center of gravity disposed beneath the plane of said scanning camera carriage (13) (Col 4 Lines 48-59). It would have been obvious to one of ordinary skill in the art at

the time of the invention to combine the scanner of Doering, Wertz and Maskens with the camera location of Barry as a design choice.

***Allowable Subject Matter***

Claim 13 objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

[claim 13]

Doering teaches the illuminator mechanically independent of the camera assembly only along one axis (Col 4 Lines 24-45, Fig. 1). Doering does not teach the illuminator mechanically independent of the camera assembly on both the x and y axis, wherein mechanically independent is taken to be the ability to move the light along the x axis while the camera assembly remains stationary in both the x and y axis. Maskens teaches a camera assembly independently movable along both the x and y axis (Fig. 1). Maskens does not teach the use of an illuminator mechanically independent of the camera assembly. This feature along with the others overcomes the prior art.

***Conclusion***

The prior art made of record and not relied upon is considered pertinent to applicant's disclosure.

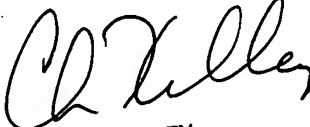
US Patent 5,231,675 to Sarr et al.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Erick Rekstad whose telephone number is 703-305-5543. The examiner can normally be reached on 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Chris Kelley can be reached on 703-305-4856. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

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